WEATHER, FORECASTS AND WARNINGS, OCTOBER, 1911.

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At the beginning of the month a severe storm had just passed out the Gulf of St. Lawrence, and another had reached the upper Mississippi Valley, with a ridge of moderately high pressure over the Atlantic States. Over the western half of the country pressure was also low with another well-defined center of disturbance over Idaho. General rains had fallen over the northern half of the country and temperatures were generally high, abnormally so in the great central valleys, the South and the Southwest.

On Sunday, October 1, the following bulletin was issued:

There are no indications at the present writing of a disturbance in the West Indies.

In the United States the coming week will be one of rapid temperature changes in northern and moderate temperature in southern districts and on the Pacific coast. The precipitation during the week will be above the normal except on the Gulf and South Atlantic coasts.

Low barometric pressure over the western districts at the beginning of the week will result in unsettled weather and general rains the first part of the week in practically all districts east of the Rocky Mountains; it will cross the Rocky Mountains Monday, the Central Valleys Tuesday, and reach the Eastern States about Wednesday. This disturbance will be followed by a pronounced change to lower temperature which will in all probability be attended by frosts in the Northwestern States and the Northern States from the upper Mississippi Valley eastward.

Subsequent conditions were substantially in accordance with the forecast. Three pronounced storms moved rapidly across the northern portion of the country, attended by general rains and rising temperatures, with moderately high pressure and falling temperatures intervening, until at the end of the week high pressure prevailed with fair weather except on the south Atlantic coast where the remnants of the third storm of the week persisted, and on the north Pacific coast where there were indications of the approach of another disturbance. The frosts were confined to the regions from the Great Lakes eastward and to the central and northern Rocky Mountain districts. On the morning of October 8 they were heavy to killing in New York and New England. High winds occurred on October 3 and 4 on the Great Lakes and on the latter date in New England and the middle Atlantic States. Storm warnings were ordered at the proper time, and only a few minor casualties without loss of life were reported.

Special features in connection with the weather of the week were (1) the occurrence of the first rain of the autumn season in California; (2) torrential rains on October 4 and 5 over western Colorado and northern New Mexico, accompanying the third storm of the week, and resulting in floods in all rivers and great damage of the character incident to such occurrences. Some loss of life was reported, and the damage to property is said to have amounted to about $5,000,000, a large part of which fell upon the railroads; (3) similar heavy rains from the same storm on October 5 and 6 over Wisconsin and eastern Minnesota. Heavy rains had fallen earlier in the week, and a great volume of water had accumulated behind the two dams of the La Crosse Water Power Co. at Hatfield, Wis. This volume was largely increased by the later rains, and, while the dams withstood the pressure, the embankments at the sides gave way, releasing the water above the dams. This rushed down Black River and practically obliterated the town of Black River Falls, Wis., and did great damage to other towns along the river. Much damage was also done along the Chippewa and other rivers, the farmers and railroads suffering severely; (4) the first substantial snowfall of the season over northern New York and portions of New England.

During this week the weather over the Southern States continued fair and abnormally warm until October 8, when the high pressure area to the northward brought a decided fall in temperature with increasing cloudiness and some local showers.

On Sunday, October 8, the following bulletin was issued:

There are no indications at the present time of a disturbance in the Gulf of Mexico or the Caribbean Sea. A barometric depression appears some distance south of Bermuda, but it is probable that it will move north-northeast and not reach the Atlantic coast.

The indications are that the unusual atmospheric activity in the United States which prevailed during the last two weeks will be succeeded the coming week by a normal progression of high and low pressure areas across the country. The disturbances will in all probability move in high latitudes and hence the rainfall during the week will be generally light, except in the Pacific States, where rains will be frequent.

The temperature during the week will be normal for the season generally. The next disturbance to cross the country will appear in the Northwest Monday or Tuesday, cross the Middle West Tuesday or Wednesday, and reach the St. Lawrence Valley about Thursday; it will be preceded by a general rise in temperature, attended by a short period of local rains, and be followed by a change to colder weather, with probable frosts in the northern half of the country.

During the second week of the month pressure was low over the Canadian Maritime Provinces, but high elsewhere east of the ninetieth meridian, except along the Gulf coast, until October 14, when a disturbance from the West reached the upper Mississippi Valley. A moderate depression along the Gulf coast with the strong high area to the northeastward caused rains to set in during October 9 in the Ohio Valley and the Southern States, and during October 10 and 11 the rains extended into the lower lake region and the Middle Atlantic States. In the South Atlantic and east Gulf States the rains continued until October 12.

Low pressure had been persistent over Alaska since the beginning of the month, and during October 7 a disturbance appeared off the extreme north Pacific coast. It moved southeastward to Utah with increasing energy, and then turned sharply northeastward, diminishing slowly and disappearing during the night of October 10 over Saskatchewan. The precipitation from this disturbance covered the north Pacific States, Idaho, Utah, and the western portions of Wyoming and Montana. During the night of October 10–11 a severe snowstorm, accompanied by high winds, set in over southwestern Montana. The storm appears to have been most severe

in the vicinity of Butte, where it is said 2 feet of snow fell, and considerable damage was done, particularly to telegraph, telephone, and power lines. A moderately strong high area followed this disturbance, but it dissipated over the Rocky Mountains on October 13, by which time depressions had appeared over North Dakota and eastern Texas. Rain had been falling over the latter district since October 9, but it ended with the disappearance of the disturbance during the night of October 13–14. The northern disturbance drifted slowly eastward, assuming definite formation during the night of October 13–14, and was attended by rains from the Missouri Valley eastward, reaching the Atlantic coast October 15. During the evening of October 14, while the center of disturbance was over Wisconsin, severe local storms occurred over southeastern Illinois and southwestern Indiana, and considerable damage was done.

Another offshoot from the Alaska low reached the north Pacific coast on October 13, and moved eastward over the British Northwest, reaching Manitoba on the following day and disappearing. There was no rain resulting except in the north Pacific States. At the same time another disturbance developed over the eastern slope of the central Rocky Mountains, and by the morning of October 15 it had reached northeastern Kansas with well-defined formation, but practically without precipitation. A high area followed, appearing on the Oregon coast during October 13.

Northeast storm warnings were ordered late in the afternoon of October 12 from Norfolk, Va., to Boston, Mass. A disturbance was apparently moving up the coast, some distance off shore, and while high wind velocities were not recorded at stations, strong winds prevailed seaward.

Temperatures were moderate as a rule, except in the South, where they continued high for the season. There were no frosts of consequence, except in the cranberry bogs of Massachusetts and New Jersey on the morning of October 14, for which warnings were ordered on the preceding day.

On Sunday, October 15, the following bulletin was issued:

There are no indications at the present time of a disturbance in the Gulf of Mexico or the West Indies.

In the United States the coming week will be one of rapid temperature changes over the northern half and moderate temperature in the southern half of the country. The precipitation during the week will probably be above the normal in the north Pacific States, below the normal in the Southern States, and near or above the normal elsewhere.

A disturbance that was over the Plains States Sunday will advance to the lake region Monday and move thence to the Northeastern States by Monday night or Tuesday; it will be attended by rains over the Middle and Northern States east of the Mississippi River, and probably by high winds on the Great Lakes; it will be followed by considerably cooler weather over the interior districts east of the Rocky Mountains, with probable frost Monday morning in the Rocky Mountain region and Tuesday in the Plains States and the upper Mississippi Valley and the lake region.

The next disturbance to cross the country will appear on the north Pacific coast Monday or Tuesday, cross the Middle West about Wednesday, and reach the Eastern States about Thursday or Friday; it will be preceded by a general rise in temperature, be attended by considerable precipitation, and be followed by cooler weather, which will appear in the Northwest Wednesday.

The disturbance that was central over Kansas on the morning of October 15 moved northeastward over Lake Superior passing beyond the field of observation during the following day. Pressure fell considerably to the eastward and southeastward, and a slight secondary disturbance appeared over the east Gulf States. As a result rains occurred generally over the central valleys, the Lake region, and the South, extending into the Middle Atlantic States and New England during October 17, when a trough of low pressure extended from Ontario southward through the South Atlantic States, and pressure was generally low to the westward with another moderate disturbance over eastern Colorado. At the same time a strong high area had formed over the Canadian Maritime Provinces. This high area remained stationary for 5 days with relatively low pressure persisting to the southward and southwestward, and the resulting northerly and easterly winds were accompanied by rains that continued over New England and the Middle Atlantic States until the night of Sunday, October 22. During the 24 hours ending at 8 a. m., October 17, the rainfall was very heavy in interior Alabama and along the southern Appalachians, necessitating flood warnings on October 19 for the Santee River of South Carolina. On October 18 the heavy-rain area covered the Middle Atlantic States and the upper Ohio Valley, and during the following night it extended into southwestern New England, Hartford, Conn., reporting 4.62 inches of rain in 24 hours.

The Colorado disturbance of October 17 moved eastward, practically without precipitation, and disappeared in the middle Mississippi Valley during the night of October 18–19, by which time the second high area of the week had reached the central Rocky Mountain Region, the first one having dissipated over the Middle Plateau a day or two before. The second high area was attended by snows on October 18 and 19 in Wyoming and central and eastern Colorado, and by cold weather that extended slowly eastward, reaching the Mississippi Valley on the morning of October 22, by which time temperatures in the Northwest had risen materially. Killing frosts occurred on several days in the Missouri and the upper Mississippi Valleys and the Southwest, for all of which warnings were issued on the days previous to their occurrence. On the morning of October 22 warnings were issued for frosts on the following morning in the east Gulf States.

West of the Rocky Mountains the weather was generally clear during the week, with comparatively low temperatures over the interior districts. Storm warnings were ordered on Lakes Michigan and Superior on October 15 for the storm that at that time was over Kansas, and moderately high winds occurred during the next 24 hours. On October 16 warnings were also ordered for Lakes Huron, Erie, and Ontario, but as the Kansas disturbance moved almost due northward after reaching Iowa, no high winds were reported. During October 17 there was a sharp fall in pressure over the South Atlantic States, and as pressure was high to the northeastward high easterly winds were anticipated, and in the evening warnings were ordered for the southern New England and the middle Atlantic coasts. High winds occurred as forecast on the Long Island and New Jersey coasts.

On Sunday, October 22, the following bulletin was issued:

There are no indications at the present time of a disturbance in the Gulf of Mexico or the West Indies. An area of low barometric pressure of great magnitude over the British Isles will move eastward and cause stormy weather over Europe during the next several days.

In the United States the temperature during the week will average low for the season over practically all districts from the Rocky Mountains to the Atlantic coast, and there will be frosts on Monday in the interior of the Gulf States and in the Ohio Valley and by Tuesday or Wednesday in the Middle Atlantic and elevated regions in the South Atlantic States. The precipitation for the week will be below the normal generally. There will be rain or snow Monday in the region of the Great Lakes and rain Monday and probably Monday night in the Middle Atlantic and New England States, followed by a change to colder weather in those districts Tuesday. The next general disturbance to cross the country will appear in the Northwest Tuesday or Wednesday, advance eastward over the Middle West Wednesday night or Thursday and the Eastern States about Friday; this disturbance will be preceded by rising temperature attended by local areas of precipitation, and be followed by a change to considerably colder weather.

At the beginning of the week pressure was low from the Lake region eastward and high over the Canadian Maritime Provinces, and rain had been falling generally for 2 days over the Atlantic States and the Lake region. In the Gulf States and the Southwest pressure was high with comparatively low temperatures and light frosts. The weather cleared in the East on Monday, October 23, with rapidly rising pressure, and on the morning of October 24 marked high pressure prevailed from the Mississippi Valley eastward, except in New England, with heavy to killing frosts in the Ohio and middle Mississippi Valleys and Tennessee and light frosts in the interior of Virginia and North Carolina. During the remainder of the week pressure continued generally high with comparatively low temperatures, except in Florida and along the Gulf of Mexico. There was no precipitation of consequence over the interior districts, except in the central Rocky Mountain region and the extreme Southwest, where there were general snows and rains, lasting from Thursday, October 26, to Saturday, October 28, inclusive. These snows and rains were due to a pressure distribution that causes precipitation in that vicinity, low over the Southern Plateau and high along the eastern slope of the Rocky Mountains. Over the middle and northern districts west of the Rocky Mountains the weather was fair and cool throughout the week, with frosts in the northern coast States during the latter half.

Storm warnings were ordered on Lakes Ontario, Erie, St. Clair, and southern Huron on the morning of October 23 for the disturbance that at that time was over Lake Michigan, and high westerly winds occurred during the following afternoon and night.

On the morning of Monday, October 23, a decided pressure fall over the West Indies indicated the presence of a disturbance in the Caribbean Sea not far from Porto Rico and Santo Domingo. The usual advices were at once telegraphed and special observations called for at frequent intervals. The disturbance was of small diameter and moved slowly west-northwestward, passing south of and near Habana, Cuba, early on the morning of Friday, October 27, and moving into the Gulf of Mexico during the day. The meteorological office at Habana reported a rough sea at Puerto Plata, Santo Domingo, on October 23, and a moderately high wind of 44 miles an hour from the southeast at Habana as the storm center passed that point, but nothing of special importance was reported from any land station. However, excellent wireless reports were received from various vessels each day, and these afforded the only really accurate information as to the probable location of the storm center until it appeared over northwestern Cuba.

The high pressure that prevailed over the interior of the United States prevented the recurving of the storm over Florida, and it continued its west-northwest movement into the Gulf of Mexico. On the morning of Thursday, October 26, northeast storm warnings were ordered displayed on the south Florida coast, and at 3 p. m. of the same day hurricane warnings were ordered from Tampa to West Palm Beach, Fla. On the following morning, when it was apparent that the disturbance had passed into the Gulf, the warnings were lowered. The disturbance apparently lingered in the southern Gulf of Mexico, as barometric conditions continued unsettled over western Cuba and southern Florida for several days after October 27, and on Tuesday, October 31, there were strong indications that the storm had recurved and was approaching the northwest coast of Florida. Storm warnings were ordered from Norfolk, Va., to Jacksonville, Fla., and by night the storm center was over northern Florida. It still retained its moderate character and passed northeastward over the Atlantic Ocean during the night with decreasing intensity. Only moderately high winds occurred, and light winds only were recorded north of Savannah, Ga., or south of Jacksonville, Fla.

On Sunday, October 29, the following bulletin was issued:

No abnormal weather conditions are probable during the next several days in any part of the country, and the indications are that the coming week will be one of seasonal temperature and generally fair weather in the United States. The next disturbance to cross the country will appear in the far West about Tuesday, advance thence in an easterly course and reach the Great Central Valleys Wednesday or Thursday and the Eastern States about Friday; it will be attended by a short period of unsettled weather and precipitation and be followed by colder weather over the northern half of the country.

The week opened with a moderate and narrow low pressure area extending from Arkansas northward through Iowa, attended by rains in that section and the upper Mississippi and lower Ohio Valleys. At the same time an extensive high area appeared over the Northwest. The low area moved northeastward to eastern New York and disappeared during the night of October 31, by which time the rain area had extended through the Lake region, the middle Atlantic States, and New England, with some snow over the extreme northern districts. Pressure had also been moderately low over southern Texas and heavy rains fell over that section during Monday, October 30.

The high area over the Northwest continued to increase in magnitude and at the end of the month it was central over eastern Montana, accompanied by very low temperatures that promised to spread rapidly to the eastward and southward.

In the Icelandic area barometric pressure was continuously above normal from October 1 to 20, and from October 22 to 25, inclusive. Depressions occurred on October 2, 6, 10, 21, 26, and 30, the one on the last-named date being the most marked. The most important crests occurred on October 3–4 and 8. The depression noted over Iceland on October 21 passed over the British Isles on the night of that date causing severe gales. A storm occurred during the afternoon and night of October 1 over the North Sea, in which a number of small craft and about 240 lives were lost. Barometric fluctuations and storm movement over Iceland during the month were relatively feeble, and the same fact is to be noted in connection with storms that occurred in the United States. In the Azores pressure was above normal from October 4 to 10, inclusive, on October 14, and from October 23 to 31, inclusive, and was low or below normal on October 2, 12, 16–17, 20, 26–27, and 30. Over Siberia pressure was relatively high during the first 7 or 8 days of the month; it was low from October 8 to 15, inclusive, high during October 16 and 17, low from October 18 to 26, inclusive, and above normal after the latter date to the end of the month. At Honolulu pressure was below normal on October 1–2, 7, 11, 14–15, 19, 24–25, and 30, the most important depression being that of October 24–25. Pressure was high on October 4, 9, 12, 22, 27, and 28. In Alaska pressure was generally below normal during the first half of the month, while during the latter half it was above. Depressions occurred during October 4–5, 9–11, inclusive, 14–16, inclusive, 19–20, 22–23, 27 and 28, while crests occurred on October 1, 7, 12–13, 17–18, 21, 25 to 27, and 29 to 31, inclusive. On October 5, a tidal wave struck the western coast of the State of Sonora, Mexico, causing the almost total destruction of several small towns, besides loss to shipping in the Gulf of California. It was followed by a storm of hurricane intensity which lasted several days. The wind is reported to have attained a velocity of 90 miles an hour.

Average temperatures and departures from the normal.

Districts.	Number of stations.	Average temperatures for the current month.	Departures for the current month.	Accumulated departures since Jan. 1.	Average departures since Jan. 1.
New England	12	50.2	−0.2	+ 3.7	+0.4
Middle Atlantic	15	55.9	+0.5	+10.0	+1.0
South Atlantic	10	67.4	+3.8	+21.4	+2.1
Florida Peninsula[1]	9	78.1	+4.8	+17.6	+1.8
East Gulf	11	70.1	+4.6	+29.6	+3.0
West Gulf	10	66.9	+4.6	+33.4	+3.3
Ohio Valley and Tennessee	13	58.9	+1.9	+23.3	+2.3
Lower Lakes	10	50.7	−0.9	+12.0	+1.2
Upper Lakes	12	47.3	−0.4	+20.8	+2.1
North Dakota[1]	9	42.6	−0.6	− 2.1	−0.2
Upper Mississippi Valley	14	51.5	−1.4	+23.0	+2.3
Missouri Valley	13	51.5	−1.5	+29.0	+2.9
Northern slope	9	42.6	−2.1	+ 0.9	−0.1
Middle slope	6	53.6	−2.0	+26.4	+2.6
Southern slope[1]	8	62.7	+0.4	+31.9	+3.2
Southern Plateau[1]	10	58.8	−0.8	+ 0.9	+0.1
Middle Plateau[1]	10	46.8	−2.1	+ 2.3	+0.2
Northern Plateau[1]	10	46.4	−1.8	− 7.2	−0.7
North Pacific	7	51.6	+0.5	−10.3	−1.0
Middle Pacific	5	59.4	−0.1	−13.4	−1.3
South Pacific	4	63.6	+1.2	− 0.2	0.0

[1] Regular Weather Bureau and selected cooperative stations.

Average precipitation and departures from the normal.

Districts.	Number of stations.	Average.		Departure.	
		Current month.	Percentage of normal.	Current month.	Accumulated since Jan. 1.
New England	11	3.66	+0.10	103	− 4.20
Middle Atlantic	15	3.82	+0.60	119	− 4.80
South Atlantic	11	4.72	+0.80	120	−14.90
Florida Peninsula[1]	9	4.45	+0.20	105	−12.90
East Gulf	11	3.96	+1.20	143	− 5.20
West Gulf	10	2.05	−1.50	58	− 6.60
Ohio Valley and Tennessee	13	3.75	+1.20	108	− 0.60
Lower Lakes	9	3.72	+0.80	127	+ 0.60
Upper Lakes	13	3.98	+1.20	143	+ 0.50
North Dakota[1]	9	1.18	+0.10	109	+ 0.90
Upper Mississippi Valley	15	3.15	+0.70	129	+ 0.20
Missouri Valley	12	2.81	+0.90	147	− 4.30
Northern slope	9	1.41	+0.50	155	− 0.70
Middle slope	6	0.77	−0.80	49	− 3.70
Southern slope[1]	8	1.26	−0.70	64	− 5.50
Southern Plateau[1]	9	1.73	+1.00	237	+ 3.60
Middle Plateau[1]	11	1.36	+0.40	142	+ 1.20
Northern Plateau[1]	10	1.48	+0.20	116	− 2.10
North Pacific	7	1.48	−2.50	37	+ 5.20
Middle Pacific	7	0.60	−0.90	38	+ 2.20
South Pacific	4	0.16	−0.60	21	+ 6.90

[1] Regular Weather Bureau and selected cooperative stations.

Average relative humidity and departure from the normal.

Districts.	Average.	Departure from normal.	Districts.	Average.	Departure from normal.
New England	80	+1	Missouri Valley	78	+11
Middle Atlantic	80	+4	Northern Slope	72	+12
South Atlantic	83	+5	Middle Slope	66	+ 7
Florida Peninsula	81	+1	Southern Slope	65	+ 2
East Gulf	79	+6	Southern Plateau	54	+12
West Gulf	74	+2	Middle Plateau	52	+ 3
Ohio Valley and Tennessee	80	+9	Northern Plateau	57	− 6
Lower Lakes	79	+6	North Pacific	82	+ 2
Upper Lakes	81	+3	Middle Pacific	67	− 3
North Dakota	80	+8	South Pacific	64	− 6
Upper Mississippi Valley	79	+8			

Average cloudiness and departure from the normal.

Districts.	Average.	Departure from normal.	Districts.	Average.	Departure from normal.
New England	6.1	+0.7	Missouri Valley	5.7	+1.6
Middle Atlantic	5.9	+1.1	Northern Slope	4.6	+0.2
South Atlantic	5.6	+1.6	Middle Slope	4.6	+1.2
Florida Peninsula	4.8	+0.2	Southern Slope	4.2	−0.4
East Gulf	5.1	+1.2	Southern Plateau	2.5	+0.3
West Gulf	4.7	+1.0	Middle Plateau	3.2	−0.1
Ohio Valley and Tennessee	6.0	+1.6	Northern Plateau	4.0	−0.6
Lower Lakes	6.1	+0.2	North Pacific	6.2	−0.1
Upper Lakes	6.9	+0.9	Middle Pacific	3.3	−0.5
North Dakota	5.8	+0.6	South Pacific	2.4	−0.7
Upper Mississippi Valley	6.2	+1.6			

Maximum wind velocities.

Stations.	Date.	Velocity.	Direction.	Stations.	Date.	Velocity.	Direction.
Bismarck, N. Dak.	3	56	w.	Nantucket, Mass.	2	58	nw.
Buffalo, N. Y.	4	64	sw.	New York, N. Y.	5	54	nw.
Do.	22	60	w.	Do.	18	50	se.
Do.	23	60	w.	North Head, Wash	8	74	se.
Do.	24	56	w.	Do.	13	62	s.
Cleveland, Ohio	4	54	nw.	Pierre, S. Dak.	3	54	w.
Detroit, Mich.	4	53	w.	Pittsburgh, Pa.	4	50	nw.
Independence, Cal.	9	50	se.	Point Reyes Light, Cal.	4	58	nw.
Modena, Utah	9	50	sw.	Do.	9	53	nw.
Mount Tamalpais, Cal.	25	58	nw.	Do.	25	67	nw.
Do.	26	62	nw.	Do.	26	54	nw.
Mount Weather, Va.	5	52	nw.	Toledo, Ohio	4	53	sw.